



Atty. Dkt. No. 067238-0115

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Atsufumi SHIBAYAMA, et al.
Title: DATA PROCESSOR WITH AN IMPROVED
DATA DEPENDENCE DETECTOR
Appl. No.: 09/994,806
Filing Date: 11/28/2001
Examiner: Unknown
Art Unit: 2152

TRANSMITTAL OF FORMAL DRAWINGS

Commissioner for Patents
Washington, D.C. 20231

ATTENTION: DRAWING REVIEW BRANCH

Sir:

Transmitted herewith are the formal drawings (12 sheets, Figures 1A-1D, 2-5, 6A-6C, 7A-7C, 8, 9A-9C, and 10) for the above-identified application. The Official Draftsperson is respectfully requested to approve these drawings for entry into the application.

Respectfully submitted,

Date March 3, 2003

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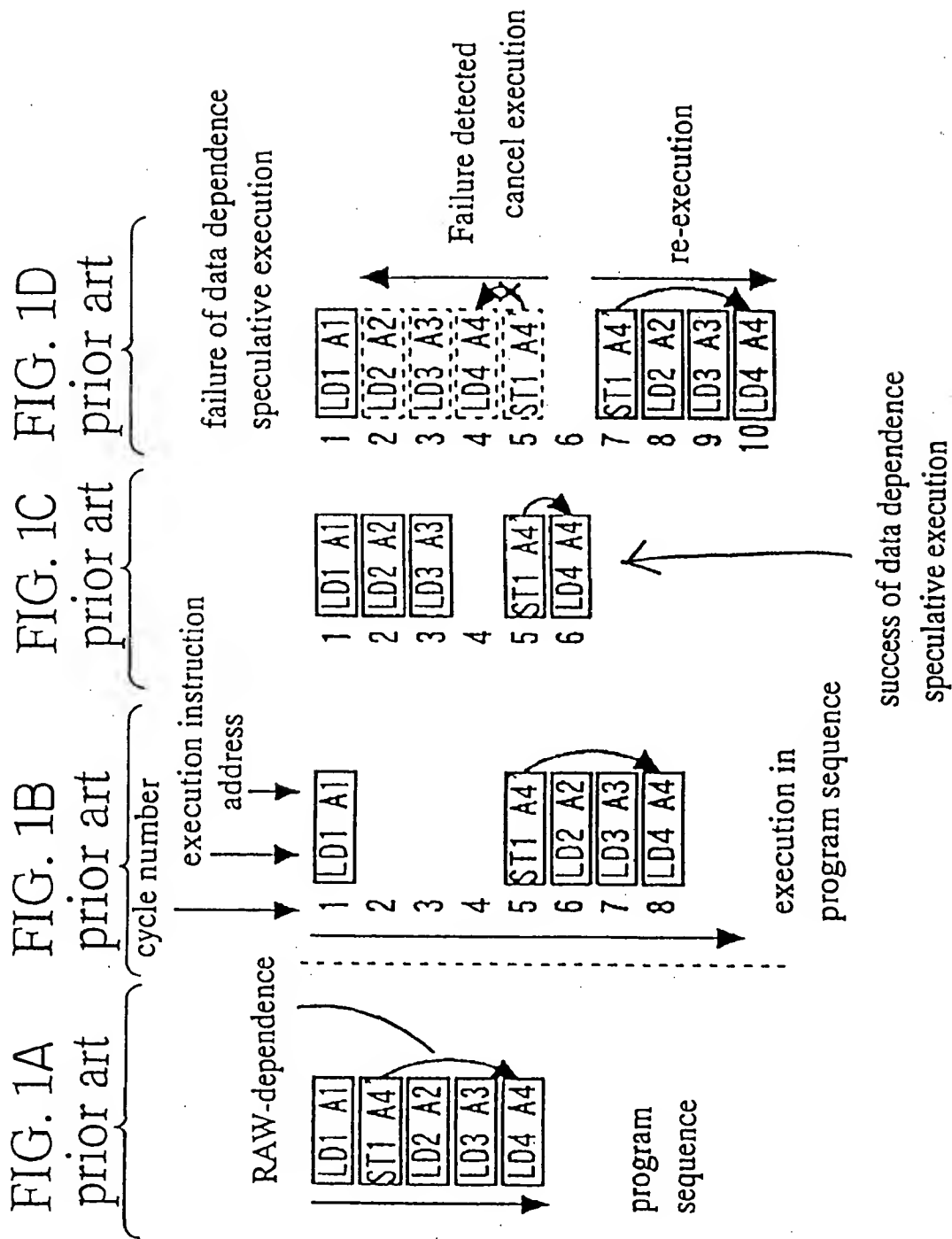




FIG. 2 prior art

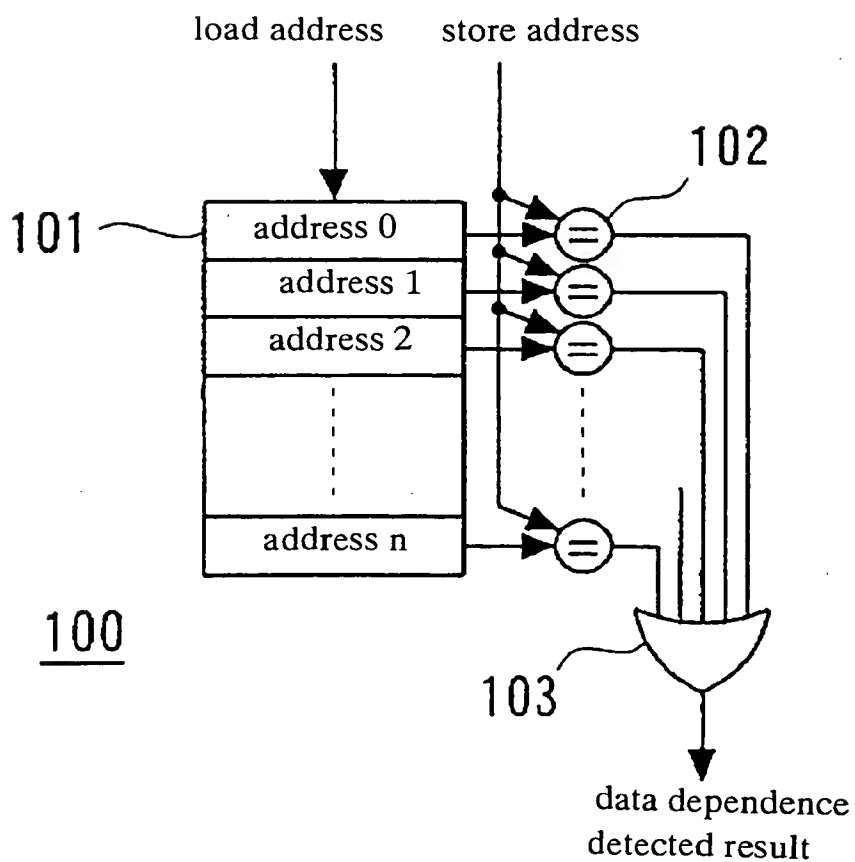
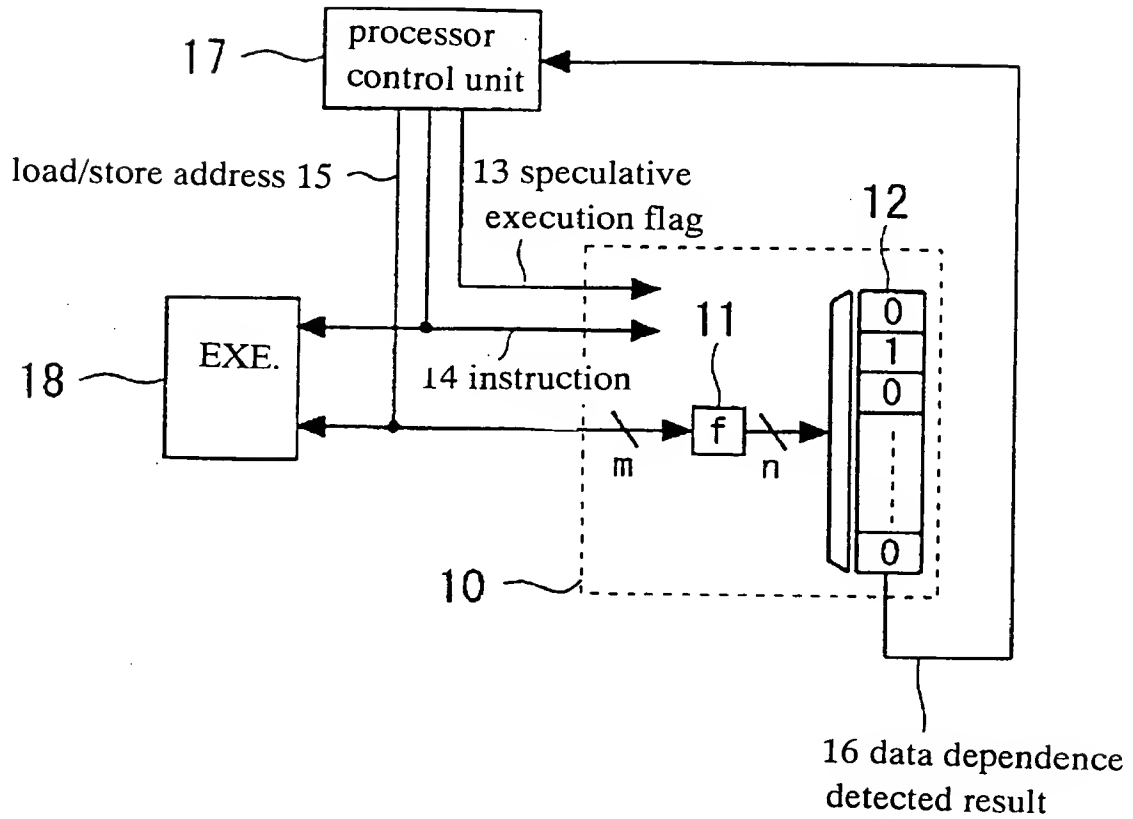




FIG. 3



The diagram illustrates the execution of a program with speculative execution and data dependencies. The timeline is divided into cycles 0 through 10. The program consists of instructions (LD, ST) and their associated load/store addresses (A1, A2) and entry numbers (N1, N2). The execution is divided into definitive and speculative regions. The speculative execution flag is high during the speculative region (cycles 3-7) and low during the definitive region (cycles 8-10). The data dependence detected result is high during the speculative region and low during the definitive region. Arrows indicate data flow: A1 points to N1 (N1=f(A1)), A2 points to N2 (N2=f(A2)), N1 points to N2 (read), and N2 points to N1 (write). The diagram is divided into 'definitive' and 'speculative' regions by vertical dashed lines at cycle 3 and cycle 7.

cycle	instruction	load/store address	entry number	speculative execution flag	data dependence detected result
0	LD	A1	N1	definitive	definitive
1				definitive	definitive
2	ST	A2	N2	definitive	definitive
3				speculative	speculative
4				speculative	speculative
5	LD	A1	N1	speculative	speculative
6				speculative	speculative
7	ST	A2	N2	speculative	speculative
8				definitive	definitive
9				definitive	definitive
10				definitive	definitive



FIG. 5

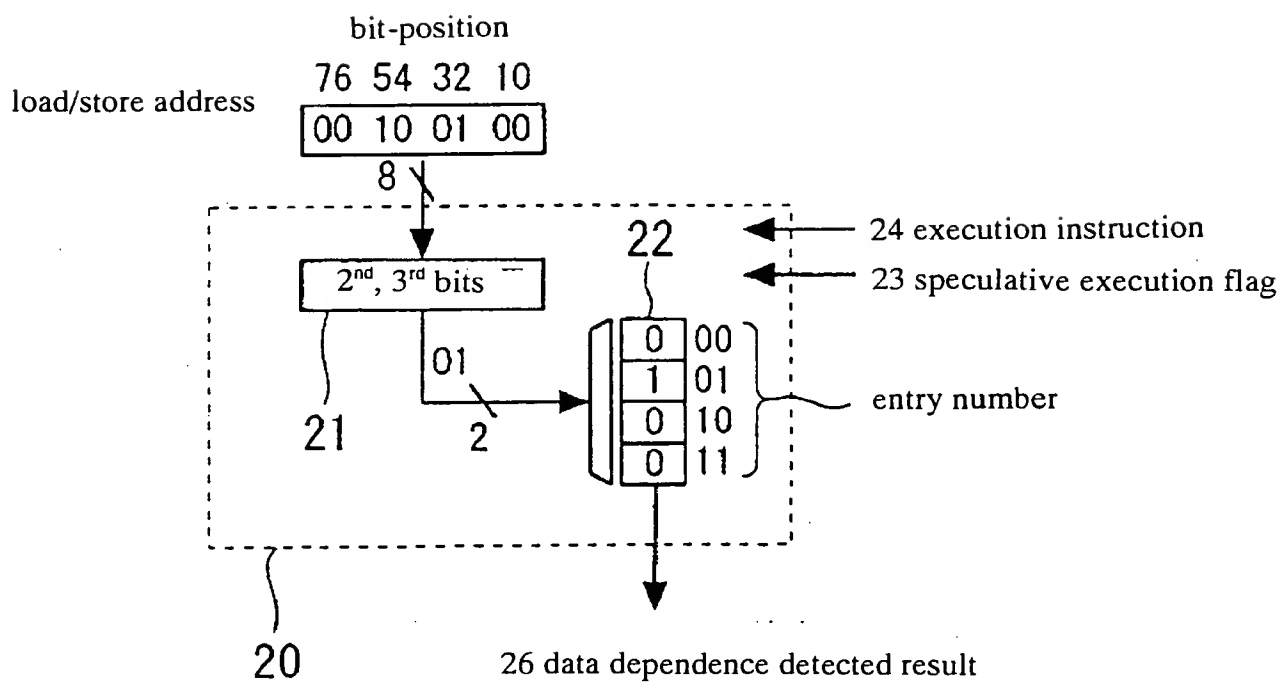


FIG. 6A

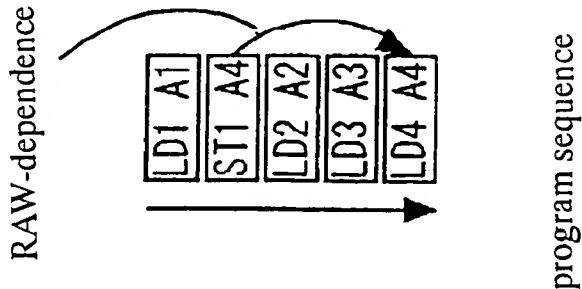


FIG. 6B

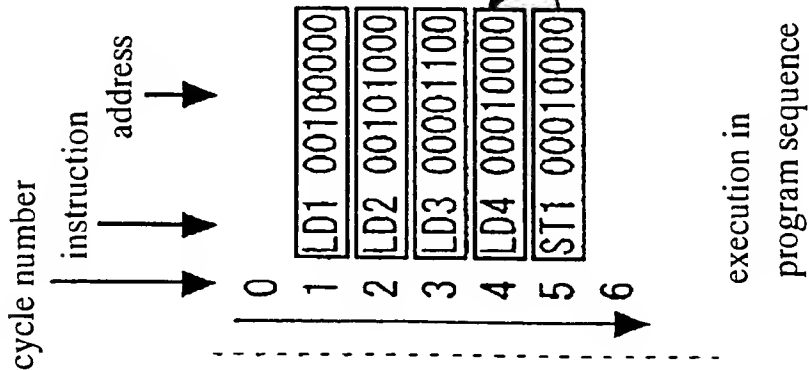


FIG. 6C

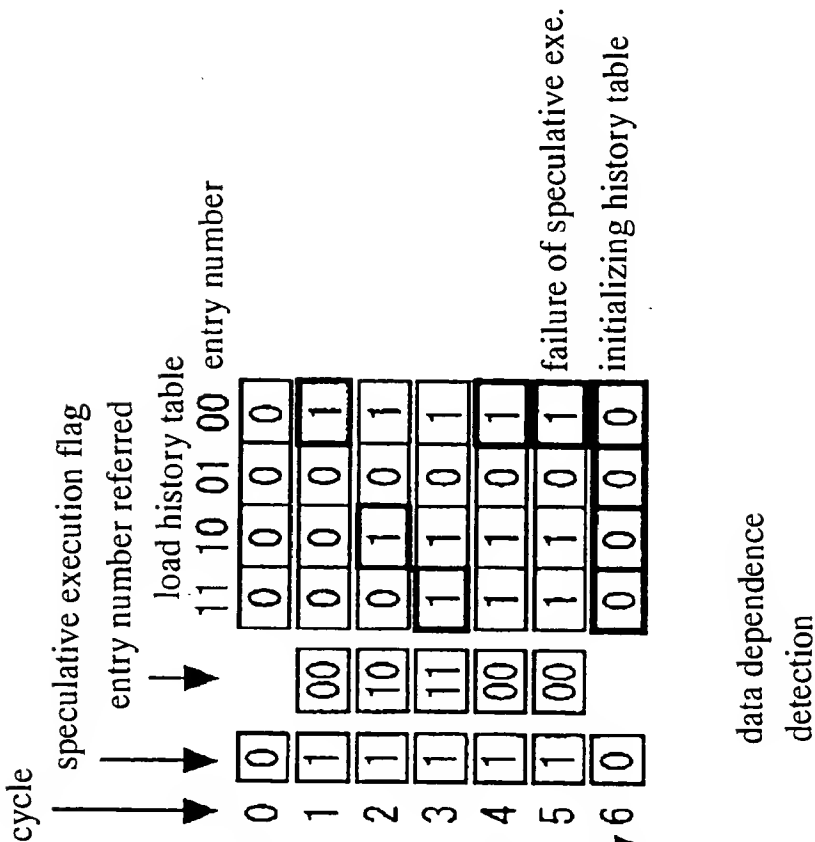




FIG. 7A

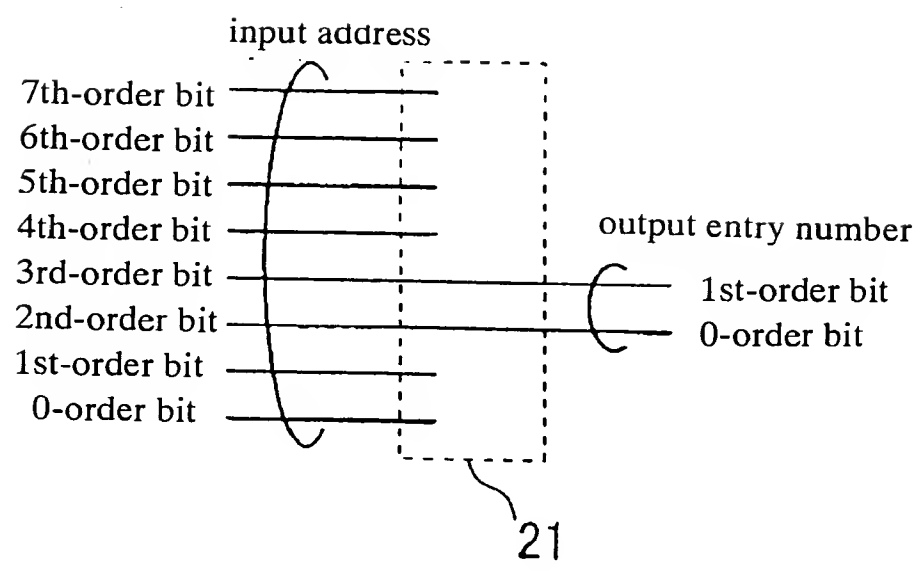




FIG. 7B

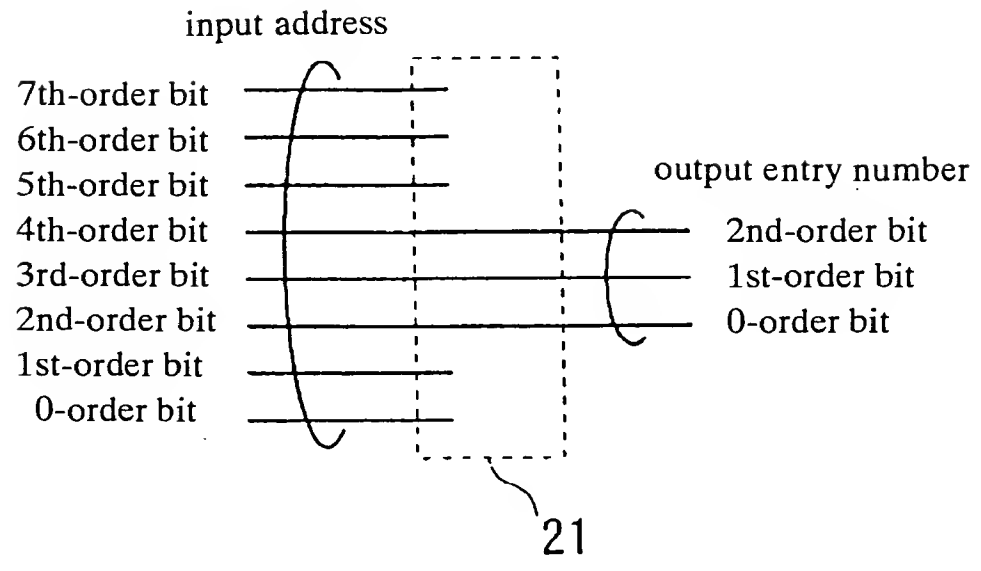




FIG. 7C

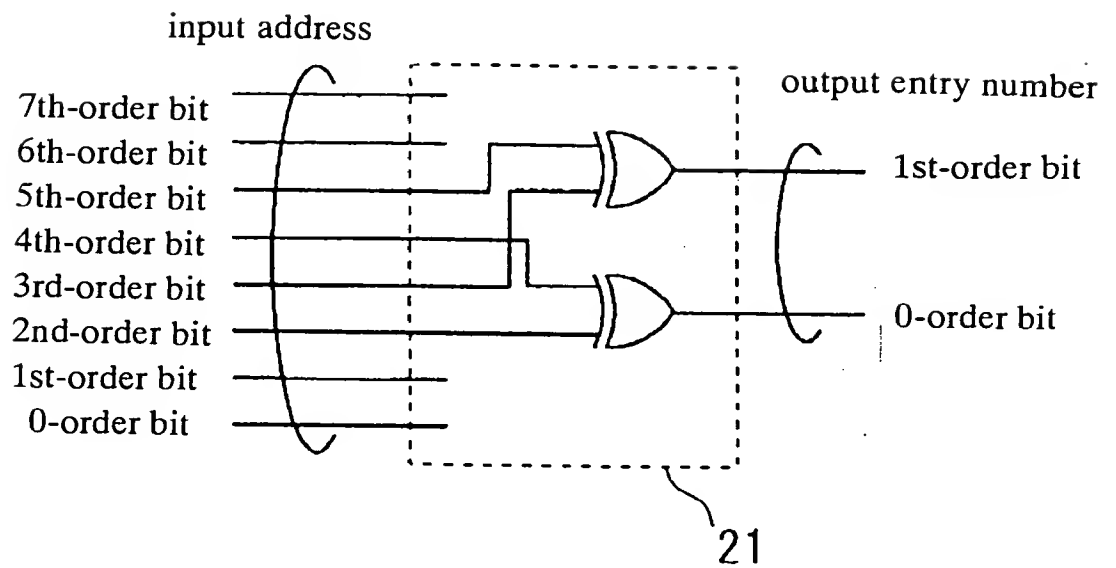
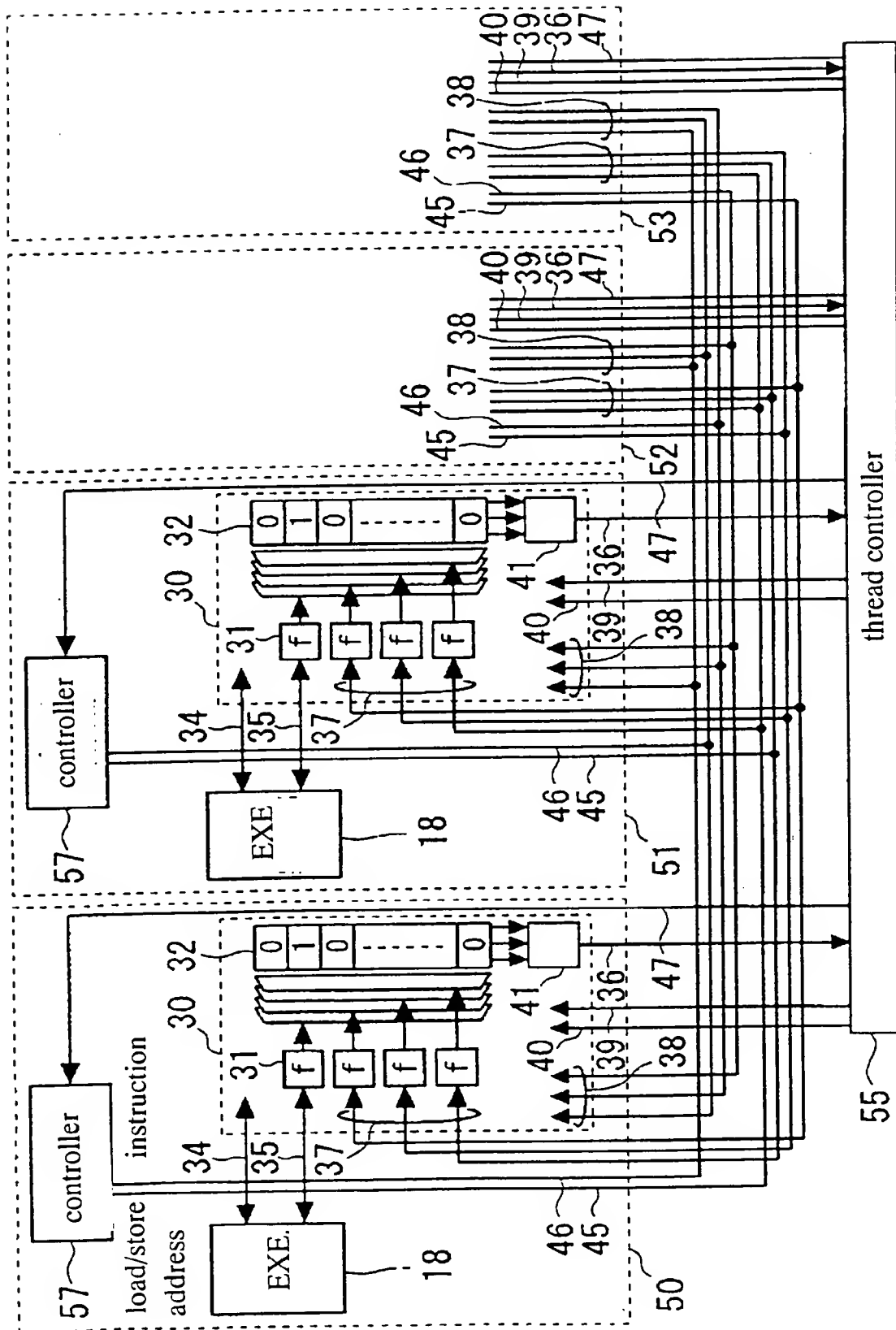




FIG. 8



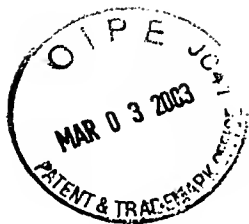


FIG. 9A

FIG. 9B

FIG. 9C

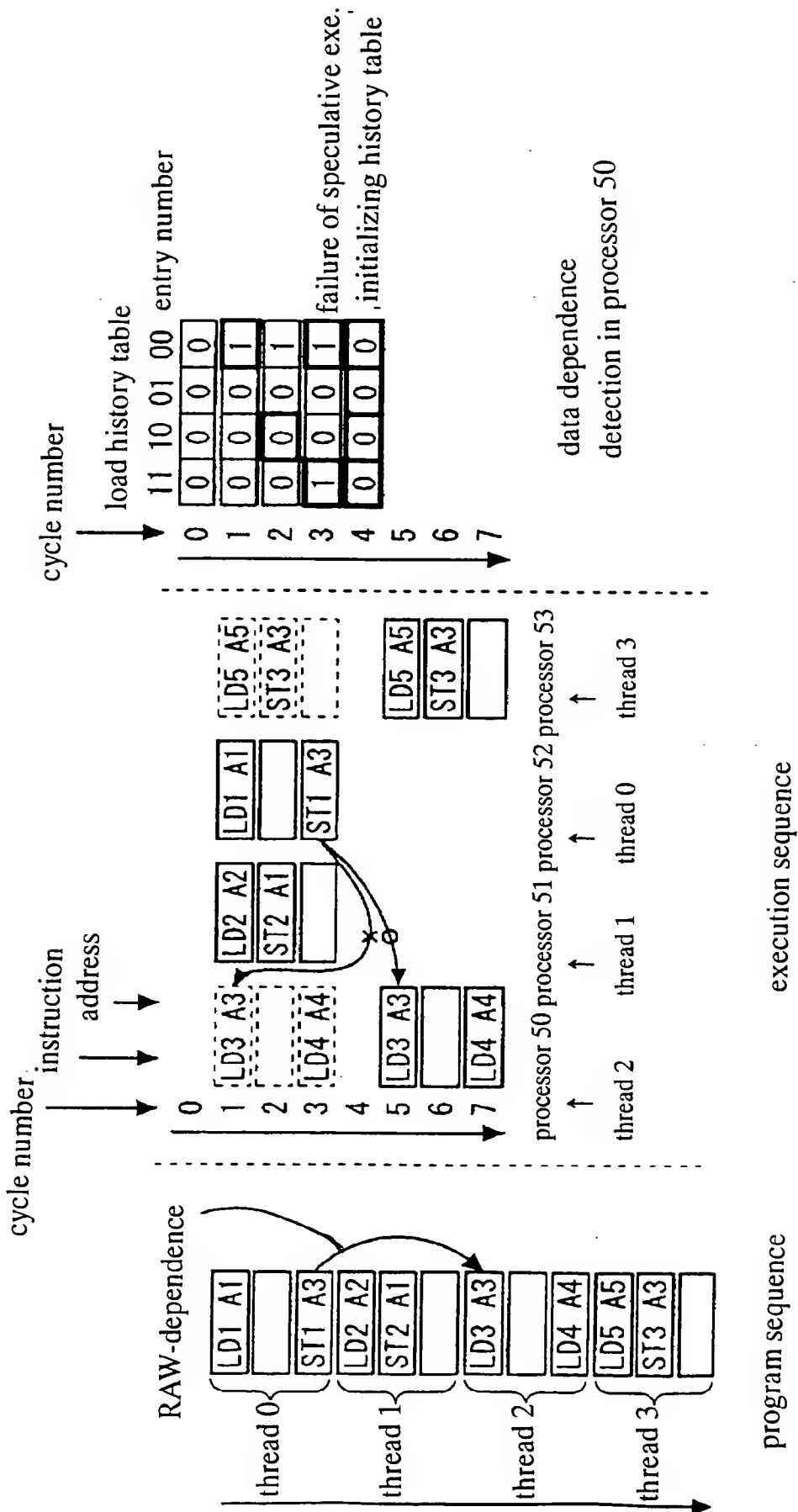


FIG. 10

